

Newton's Law of Cooling

Please show all work on E-2 paper!

Name _____

Due Date _____

1. A bowl of porridge at _____ (too hot) is placed on a 70 _____ room. One minute later the porridge has cooled to 180 _____. When will the temperature be 120 _____ (just right)?
2. A small bowl of porridge served at 200 _____ cools to 160 _____ in one minute. What temperature (too cold) will this porridge be when the bowl of exercise 1 has reached 120 _____ (just right).
3. A cold drink is poured out at 50 _____. After 2 minutes of sitting in a 70 _____ room, the temperature has risen to 56 _____. Find the drink's temperature at any time t .
4. For the cold drink exercise in problem 3, what will the temperature be after 10 min? When will the drink have warmed to 66 _____?
5. At 10:07 pm you find a secret agent murdered. Next to him is a martini that got shaken before the secret agent could stir it. Room temperature is 70 _____. The martini warms from 61 _____ to 61 _____ in the two minutes from 10:07 P.M. to 10:09 P.M. If the secret agent's martinis are always served at 40 _____, what was the time of death?
6. Twenty minutes after being served a fast-food coffee it is still too hot to drink at 160 _____. Two minutes later the temperature has dropped to 158 _____. Your friend, whose coffee is also too hot to drink, speculates that since the temperature is dropping an average of 1 _____ per minute, it was served at 180 _____. Explain what is wrong with this logic. Was the actual serving temperature hotter or cooler than 180 _____.
7. Find the actual serving temperature in problem 6 if room temperature is 68 _____.